

REMARKS

Prior to this communication, claims 1-17 and 27-29 are pending in the application. In the pending Office action, claims 1, 2, and 5-9 stand rejected, and claims 3, 4, 10-17, and 27-29 are withdrawn from consideration. By this amendment, Applicants are amending the specification, amending Fig. 1, amending claim 1, and adding claims 30-33. Reexamination and reconsideration of claims 1, 2, 5-9, and 30-33 in view of the amendment and remarks contained herein are respectfully requested.

The Office objected to the drawings as not showing every feature of the invention specified in the claims. In response, Applicants amended the drawing to include the reference letter X and amended the specification to recite reference letter X. Reference letter X represents the axial length exposed between the canopy 18 and the end frame 14. The axial length, in one construction of the invention, is variable depending on the horsepower of the motor. Applicants believe the amendments address the Office's objection, and request the Office to remove the rejection.

Claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,513,339 ("Harris"). A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. M.P.E.P. § 2131. Applicants assert the Harris reference does not teach or suggest each and every claimed element as set forth in amended claim 1.

Amended claim 1 is repeated below for the Examiner's reference.

1. An electric motor comprising:
 - a single end frame having a bearing support surface;
 - a stator having a stator core, a first end fixed relative to the end frame, and a second end remote from the end frame;
 - a bearing substantially engaged with the bearing support surface;
 - a shaft supported by the bearing for rotation about a shaft axis;
 - a rotor having opposite sides spaced in the direction of the shaft axis, the rotor being connected to the shaft for rotation with the shaft relative to the stator, the shaft being supported on only one side of the rotor for rotation about the shaft axis; and
 - a canopy fixed relative to the end frame and configured to cover at least a portion of the rotor and the second end of the stator during normal operation of the electric motor, a portion of the stator core being exposed between the end

frame and the canopy at all times during normal operation of the electric motor, the shaft not being supported by the canopy for rotation about the shaft axis.

The Harris reference does not teach or suggest an electric motor comprising, among other things, a shaft and a rotor having opposite sides spaced in the direction of the shaft axis, “the shaft being supported on only one side of the rotor for rotation about the shaft axis.”

Additionally, the Harris reference does not teach or suggest an electric motor comprising, among other things, “a canopy fixed relative to the end frame . . . , the shaft not being supported by the canopy for rotation about the shaft axis.” Rather, the Harris reference discloses a motor integral with a tube-axial fan. The motor includes a bearing element 26 and a shaft 38 supported by the bearing element 26. The shaft 38 is not supported by the bearing element 26 on only one side of the rotor like the claimed invention. See the figure of the Harris reference. Additionally, the cup-shaped hub 30, which the Office cites as the canopy, rotates relative to the end frame. That is, the cup-shaped hub 30 is not fixed relative to the end frame like the claimed invention. Moreover, the Harris reference teaches away from the canopy being fixed relative to the end frame since the Harris reference teaches integrating the blades of the fan with the hub. Accordingly, Applicants request the Office to withdraw the rejection of claim 1 as being anticipated by the Harris reference.

Claim 1 also stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,797,602 (West) in view of U.S. Patent No. 4,286,187 (Binder). To establish a *prima facie* case of obviousness, three basic criteria must be met. *M.P.E.P.* § 706.02(j) and 2143.

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must be both found in the prior art, not in applicants' disclosure.

Id. Applicants contend that the Office's proposed combination for claim 1 does not meet the *prima facie* case of obviousness.

The West reference does not teach or suggest an electric motor comprising, among other things, a shaft and a rotor having opposite sides spaced in the direction of the shaft axis, “the shaft being supported on only one side of the rotor for rotation about the shaft axis.” Rather, the West reference discloses at col. 3, lines 9-22,

Integral with one end cap 14 and extending axially inwardly towards the other end cap 15 is a hollow bush 17. The other end cap 15 is formed with a similar inwardly extending bush 18, the bush 18 being of larger diameter than the bush 17. The bush 17 receives a roller bearing assembly 19 and the bush 18 receives a ball bearing assembly 21, the bearing assemblies 19, 21 rotatably supporting a rotor shaft 22, the shaft 22 having its axis coextensive with the axis of the stator assembly 11. The shaft 22 terminates at one end within the bearing assembly 19, and protrudes at its opposite end through the bearing assembly 21, and through a correspondingly positioned aperture in the end cap 15 so as to be accessible at the exterior of the end cap 15. (Emphasis added)

Therefore, the West reference does not teach or suggest all of the limitations of claim 1. This was acknowledged by Office in the pending Office action. Instead, the Office argues claim 1 is obvious in view of the combination of the West and Binder references. However, Applicants assert that it is improper to combine the West reference with the Binder reference as the Office has done.

Before addressing the combination asserted by the office, Applicants will address the Binder reference. The Binder reference discloses a bearingless, remotely journalled generator that permits assembly to a foreign machine (e.g., an engine) having a drive shaft, “. . . in which the drive shaft itself provides the mechanical support for the shaft of the generator, and the generator is additionally secured to the housing of the machine . . .” See col. 1, lines 5-14. More particularly, the foreign machine includes the shaft 7 and the bearing 25, and the rotor 17’ of the bearingless/shaftless generator couples to the shaft 7 via an interfitting engagement surface and attaching means 33. Therefore, the Binder reference does not teach or suggest an electric motor comprising, among other things, a single end frame having a bearing support surface and a bearing substantially engaged with the bearing support surface.

Applicants assert it is not reasonable to combine the West reference with the Binder reference. The West reference explicitly teaches a dynamoelectric machine comprising two bearings, and a shaft that terminates at one end within the bearing assembly 19 and that protrudes

at its opposite end through the bearing assembly 21. The Binder reference explicitly describes a bearingless, remotely journalled generator and teaches away from a motor having a bearing. It would not be reasonable based on the teachings of the two references to combine the two bearing machine of the West reference with the bearingless machine of the Binder reference to result in the claimed invention. Therefore, the Office's proposed combination does not meet the *prima facie* case of obviousness, and Applicants request the Office to withdraw the rejection of claim 1 as being unpatentable over the West reference in view of the Binder reference.

Before proceeding to the last rejection of claim 1, it is noted that the Office states that the motivation to combine the Binder reference with the West reference is taught by the Binder reference for "reducing cost (less bearing, less cost)." See page 5 of the pending action. However, Applicants assert that the Binder reference does not provide any suggestion or motivation to modify the West reference by removing bearings for reducing cost. Rather, the invention of Binder et al. provides a generator that can mount to a shaft of an external, foreign, or remote rotary machine. See col. 1, lines 52-58. "By using the [invention of Binder et al.] as shown in FIG. 2, in which the field structure 16' is fitted directly into the bore for the bearing for the shaft, a precision locating abutment or ring or other precision positioning structure individual to the field structure can be eliminated, thus reducing manufacturing costs." Accordingly, Applicants assert that the Office was incorrect in its suggestion for the motivation to combine the West and Binder references.

Claim 1 also stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,796,190 (Takeda) in view of U.S. Patent No. 4,980,595 (Arora). The Takeda reference discloses an engine driven welding generator having a housing 101 and a cover 103. The housing 101 is mounted to an end surface of an engine body 201 by the use of through bolts. Similar to the Binder reference, the Takeda machine is a bearingless generator that permits assembly to a foreign internal combustion engine 200 comprising the shaft 202 and the bearing. The rotor 120 of the bearingless/shaftless generator couples to the shaft 202 via an interfitting engagement surface and attaching means 203. Therefore, the Binder reference does not teach or suggest an electric motor comprising, among other things, a single end frame having a bearing support surface and a bearing substantially engaged with the bearing support surface. Accordingly, the Takeda reference does not teach or suggest claim 1.

The Examiner only cited the Arora reference for the proposition that a generator can be made a motor and a motor can be made a generator. However, the Arora reference cannot be combined with the Takeda reference to cure the above described deficiencies of the Takeda reference. Similar to the arguments above for the combination of the Binder and West references, the Takeda reference teaches away from modifying its generator to include a shaft and a bearing since the Takeda reference explicitly describes connecting a shaftless/bearingless generator to an external engine comprising a shaft. Therefore, Applicants request the Office to withdraw the rejection of claim 1 as being unpatentable over the Takeda reference in view of the Arora reference. Accordingly, claim 1 is allowable and Applicants request indication of the same.

Claims 2, 5-9, and 30-33 depend, either directly or indirectly, from claim 1, and consequently, include patentable subject matter for the reasons set forth above with respect to claim 1. Accordingly, claims 2, 5-9, and 30-33 are allowable. In addition, Applicants assert claims 2, 5-9, and 30-33 include additional features that are believed to be allowable when combined with claim 1.

CONCLUSION

Entry of the Amendment and allowance of claims 1, 2, 5-9, and 30-33 are respectfully requested. The undersigned is available for telephone consultation at any time during normal business hours.

Respectfully submitted,



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AMENDMENT TO THE DRAWINGS

The attached sheet includes an amendment to Fig. 1, and replaces the original sheet containing Fig. 1. Applicants assert no new matter was added.